

NETWORKS

FAQ

Q What is Mini PCI-E and what can it be used for?

A Mini PCI-E (which is also known as PCI Express Mini Card) is an expansion card slot commonly found inside laptops made within the past 18 months and is the replacement for Mini PCI. The slot takes cards with 52-pin connectors that measure 30x56mm. These slimline cards are ideal for the cramped interior of a laptop case, particularly as they slide in horizontally.

Mini PCI-E has two operational modes: PCI-E x1 or USB2. The manufacturer of the expansion card can choose which interface type it requires. Most Mini PCI-E slots are used for internal wireless network adaptors. Sonnet's Aria Extreme N (reviewed opposite) is a Mini PCI-E Draft-N card that can be used to upgrade a laptop with 802.11g networking.

David Ludlow
Editor

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AVM Fritz!Box Fon WLAN 7140

★★★★★

£115 inc VAT

From www.voipon.co.uk

AVM's Fritz!Box Fon WLAN 7140 is an ADSL2+ modem with built-in VoIP telephony and a USB port for sharing a printer or storage. The router also connects to your regular telephone line, so you can continue to make standard phone calls as well. AVM provides all the cables you need in the box, including a special cable that connects to the router's ADSL port. This splits into two separate plugs that connect to your ADSL connection and your standard telephone line.

Configuring the router is surprisingly easy, thanks to the excellent CD-based setup wizard. This takes you through physically connecting the router, to setting up your internet connection and a secure wireless network.

Performance was excellent. Using a Centrino laptop speeds at 1m were amazing, and it managed 6.21Mbit/s at 25m, which shows that this router has great range and stability. We also tested with the Fritz!WLAN USB Stick to take advantage of the router's 125Mbit/s turbo mode. This adaptor has a special trick that makes it easy to use: plug it into the back of the router to get the current wireless settings, then into your PC to transfer them. Throughput was quick, except at 25m. The 2.13Mbit/s we achieved was worse than with our Centrino notebook, but still fast enough for web browsing.

Configuring the router's advanced features is easy via the simple web-based management. VoIP requires a SIP account. There are details of the free www.sipgate.co.uk service in the box, but you can use any alternative service. By



default, both phone ports use the same SIP service, but you can connect to two SIP accounts and give each port its own telephone number.

Dialling rules let you choose when to call out on your regular telephone line. The default rule diverts 999 calls out this way, but it's easy to set your own rules specifying how you want to make calls, such as dialling a 6 to use the landline. The router prioritises phone calls automatically using quality of service.

The router's USB port can be used for basic file sharing when USB storage is attached. It's easy to configure and can be username- and password-protected. Alternatively, a printer can be connected and shared over the network. Child-protection features let you set the times your children can go online, but we recommend dedicated web-filtering software, too.

A firewall is built in as standard and is impossible to turn off, which helps keep your network protected.

There are all the features you'd expect on a router, such as UPnP support, which can be turned on independently for device discovery and firewall reconfiguration, and Port Forwarding.

This is an excellent performer and has a stunning range of extra features. However, unless you're going to use VoIP, it is expensive and Linksys's WAG325N (see 'Also consider...') is a better choice.

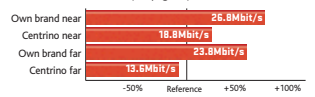
David Ludlow

SUMMARY

- ✓ Excellent performance
- ✓ VoIP built-in
- ✗ Relatively expensive

ADSL2 WIRELESS ROUTER 802.11g (125Mbit/s), 4x 10/100 LAN ports, 1x WAN port (ADSL2+ modem), UPnP, 2x telephone, USB
PART CODE 7140
DETAILS www.avm.de/en

PERFORMANCE (see page 58)



Also consider...

BUFFALO WBMR-G125

★★★★★

£48 inc VAT

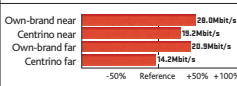
From www.lambda-tek.com/componentshop



It may be 802.11g, not Draft-N, but the Buffalo WBMR-G125 provides fantastic speeds for a very low price. It's also simple to configure, taking just a few minutes. The Buffalo CardBus adaptor will improve your speeds further and costs a mere £18 extra. Its throughput at 25m also rivals some of the more expensive Draft-N routers.



WIRELESS ROUTER 802.11g (125Mbit/s), 4x 10/100 Ethernet ports, WAN port (ADSL2+ modem), UPnP, QoS
PART CODE WBMR-G125
DETAILS www.buffalotech.com
FULL REVIEW Nov 2007



LINKSYS WAG325N Wireless-N ADSL Gateway

★★★★★

£77 inc VAT

From www.lambda-tek.com/componentshop

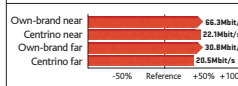


Linksys's WAG325N Wireless-N

ADSL Gateway managed the fastest transfer rates we've ever seen from wireless kit in our tests, and its range was excellent, too. Centrino performance was equally impressive, and we had no trouble connecting at 25m. This router was simple to set up and configure, and is excellent value.



WIRELESS ADSL ROUTER Draft 802.11n (300Mbit/s), 4x 10/100 Ethernet ports, WAN port (ADSL2+ modem), UPnP, QoS
PART CODE WAG325N
DETAILS www.uk.linksys.com
FULL REVIEW Sep 2007



SONNET Aria Extreme N

★★★★

£81 inc VAT
From www.macupgrades.co.uk

Sonnet's Aria Extreme N is a Draft-N upgrade for your laptop's internal wireless adaptor. It is primarily designed for use with Mac laptops (fitting instructions and tools are included), but any laptop with a Mini PCI-E slot can be upgraded.

There's no easy way to tell if your laptop is compatible without taking it apart first, so this is an upgrade for experienced users only. How easy it is to take apart depends on the model. Generally speaking, smaller manufacturers such as Rock buy a chassis with easily removable access panels. Big manufacturers such as HP and Dell assemble products in a factory, so the whole laptop has to be taken apart. This can be a difficult process, and you may damage your computer.

The Aria Extreme N is easy to fit once you have gained access to the Mini PCI-E slot. It has three antenna connections, although you need to use only those numbered 1 and 2 if you haven't got three antennae wires in your laptop. Make a note of where the existing cables are plugged into your laptop's original adaptor, so you can plug the cables into the right connectors on the Extreme N.



Sadly, there aren't any drivers in the box, and Sonnet's website was no help. In the end, we had to download the Atheros AR5008 drivers from www.atheros.cz. Once installed, we were very impressed with the performance when testing with a Buffalo Wireless-N Nfiniti Router. At 1m, we saw an incredible 72.02Mbit/s at close range and 25.26Mbit/s at 25m. This is faster than Intel's onboard Draft-N adaptors and Buffalo's own Nfiniti CardBus adaptor. Results vary between routers, however. With Linksys's WAG325N router (opposite), we saw only 28.5Mbit/s at 1m. Still, this is better than any 802.11g connection.

The Aria Extreme N is a fast, neat upgrade to a laptop that doesn't have Draft N, but it's expensive and difficult to install. Unless you're desperate to have an internal wireless adaptor, a Draft-N CardBus adaptor from the same manufacturer as your router is cheaper and easier.

David Ludlow

SUMMARY

- ✓ Fast performance
- ✗ Expensive
- ✗ Tricky to install

WIRELESS NETWORK ADAPTOR
802.11n (300Mbit/s), Mini PCI-E
PART CODE N80211-EM
DETAILS www.sonnettech.com

CHOOSING A... Wireless Router

Follow the steps to find your ideal specs

STANDARD: 802.11g (54Mbit/s)

ETHERNET PORTS: 4

BROADBAND CONNECTION: Ethernet WAN port

Recommended minimum in grey

1 A basic wireless router with the specifications above will cost around £25. As a standard 802.11g wireless router, it is quick enough to share an internet connection, but a little slow for file sharing. It doesn't have a built-in modem, so you'll have to use it with an existing broadband modem that has an Ethernet port.

2 If you have ADSL, get a wireless router that has a built-in ADSL modem. This will cost you more than a standard router, but lets you connect your router directly to your broadband connection without a separate external modem. Try to get a router with an ADSL2+ modem, as this will support broadband connections up to 24Mbit/s with an appropriate ISP.

3 Want to share large wireless files over your network? You'll need to upgrade to a MIMO or Draft-N router. MIMO routers are usually WiFi compliant and will get you transfer speeds of around 30Mbit/s. Draft-N routers are faster still, but as they're pre-standard you may have problems getting them working with kit in the future. Both MIMO and Draft-N routers need matching network adaptors to run at full speed.

4 If you're having problems getting a wireless signal in your house, a MIMO or Draft-N router can help. Alternatively, look to buy a hi-gain antenna for your router. This will boost the signal and improve throughputs and ranges to the whole of the house. You can also look into adding a hi-gain antenna to a PC's network adaptor.

5 If you've got a printer you want to share on your network, look for a wireless router with a built-in USB port and print server. Don't worry if you can't find one that matches your other requirements, though, as you can always add a dedicated wireless print server later on. Finally, if you're interested in making voice calls using a SIP connection, look for a router with built-in VoIP support as this can save you money.

HAWKING TECHNOLOGY Hi-Gain 12dBi Directional Window Antenna

★★★★

£36 inc VAT
From www.morecomputers.co.uk



Hawking Technology's Hi-Gain 12dBi Directional Window Antenna is designed to extend the range of your wireless network in one direction. It can be connected to any wireless router with an RP-SMA connector (a TNC adaptor is also supplied) to focus the wireless signal in a particular direction. This could be useful if, for example, you only use wireless in the garden and want to direct your signal that way. Alternatively, the antenna can be connected to a compatible wireless adaptor to improve its reception of the signal from your wireless router.

The antenna can be wall-mounted or, with the provided rubber suckers, stuck to a window. In this mode it projects the wireless signal through the window. This is ideal if you have a building, such as an office, in your garden and want to increase wireless reception.

A 1.2m cable is supplied, which sounds like a lot but doesn't leave much to play with once you've got the antenna stuck to a window.

Fortunately, RP-SMA connectors are used at both ends of the cable, so you could replace it with a slightly longer one if needs be.

To test the antenna, we connected it to a Hawking Technology 802.11g wireless router. With the router's standard antenna, we couldn't get a wireless signal at 25m. Replacing it with the 12dBi Antenna, we got similar throughputs at 1m and 15m. At 25m, we got a strong signal and saw a throughput of 3.76Mbit/s, which indicates that this antenna can increase the range and stability of your network. However, D-Link's ANT24-0700 (reviewed in last month's *What's New*), is an omni-directional 7dBi antenna that gave us faster throughputs at 25m. At £60 including VAT it's more expensive, though.

If you want to increase the range of your entire network, an omni-directional antenna is a better choice. But to increase performance on one network adaptor, Hawking Technology's Hi-Gain 12dBi Directional Window Antenna is good value.

David Ludlow

SUMMARY

- ✓ Good value
- ✓ Flexible mounting
- ✗ Cable a bit short

HI-GAIN ANTENNA 12dBi antenna, directional, RP-SMA and RP-TNC connectors
PART CODE HA12W

PERFORMANCE (see page 58)

